

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
4 September 2003 (04.09.2003)

PCT

(10) International Publication Number  
**WO 2003/072056 A3**

- (51) International Patent Classification<sup>7</sup>: **A61K 38/00**, C12Q 1/681, C07K 14/705
- (74) Agent: **FRIEDRICHSEN, Bernard**; Foley & Lardner, 150 East Gilman Street, P.O. Box 1497, Madison, WI 53701-1497 (US).
- (21) International Application Number:  
PCT/US2003/005874
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 25 February 2003 (25.02.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/358,700 25 February 2002 (25.02.2002) US  
60/372,921 16 April 2002 (16.04.2002) US
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): **CHIRON CORPORATION** [US/US]; 4560 Horton Street, Emeryville, CA 94608-2916 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **XIAO, Linda, Li** [US/US]; 2013 Bartlett Drive, Alameda, CA 94501 (US). **XU, Baoji** [US/US]; 915 Dewing Avenue, Lafayette, CA 94549 (US). **LUO, Jian** [US/US]; 240 Klamath Street, Brisbane, CA 94005 (US). **JOHNSON, Kirk** [US/US]; 147 Brookfield Avenue, Moraga, CA 94556 (US). **FREY, William, H., II** [US/US]; 4800 Centerville Road, Apt. 216, White Bear Lake, MN 55127 (US). **TOZZO, Effie** [FR/US]; 1600 Washington Street, Newton, MA 02465 (US). **DUHL, David** [US/US]; 2720 Camino Lenada, Oakland, CA 94611 (US).
- Published:  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report:  
24 June 2004
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INTRANASAL ADMINISTRATION OF MC4-R AGONISTS

(57) Abstract: A method for delivering a melanocortin-4 receptor agonist to a mammalian subject, includes administering the melanocortin-4 receptor agonist to a tissue inside the nasal cavity or sinuses of the mammalian subject. In some instances, the melanocortin-4 receptor agonist includes a guanidine functional group.

WO 2003/072056 A3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/05874

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 38/00; C12Q 1/68; C07K 14/705

US CL : 514/12; 435/6; 536/24.3, 23.5

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 514/12; 435/6; 536/24.3, 23.5

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	6,278,763 B1 (LEE et al) 11 September 2001 (11.09.2001), see abstract and full text, especially columns 28-29.	1
---		-----
Y		2-18
Y, P	US2002/0137939 A1 (RENHOWER et al) 26 September 2002, see full text, especially paragraphs 129-130.	1-18
---		-----
A		19
Y	US6,127,381 A (BASU et al) 03 October 2000 (03.10.2000), see column 1, lines 55-60, column 31 and example IX.	1-18
---		-----
A		19
A	WO01/41782 A2 (GUTH) 14 June 2001 (14.06.2001), full text.	1-19

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

20 March 2004 (20.03.2004)

Date of mailing of the international search report

11 MAY 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Valerie Bell-Harris  
Vickie Kilm

Telephone No. 571-272-1600

**INTERNATIONAL SEARCH REPORT**

PCT/US03/05874

**Continuation of B. FIELDS SEARCHED Item 3:**

STN/CAS ONLINE, CAPLUS, USPATFUL, REGISTRY, PCTFUL

search terms: MC4-R, melanocorti n 4-receptor, nasal; intranasal, obesity, weight disorder



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,  
SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *without international search report and to be republished upon receipt of that report*